

Amendments to the Claims

Please cancel claims 1-16 and 21 without prejudice or disclaimer of the subject matter therein.

Please enter claims 22-41:

~~22~~ (New) An isolated nucleic acid molecule selected from the group consisting of:

- (a) an isolated nucleic acid molecule comprising:
 - (i) a nucleic acid sequence encoding a canine p40 subunit protein;
 - (ii) a nucleic acid linker of (XXX)_n wherein n=0 to 60; and
 - (iii) a nucleic acid sequence encoding a canine p35 subunit protein; and
- (b) an isolated nucleic acid molecule comprising a nucleic acid sequence fully complementary to the nucleic acid molecule set forth in (a).

23. (New) The isolated nucleic acid molecule of Claim 22, wherein the p40 encoding nucleic acid sequence comprises at least 47 contiguous nucleotides identical in sequence to at least 47 contiguous nucleotides of a nucleic acid sequence selected from the group consisting of SEQ ID NO:52 and SEQ ID NO:58, and wherein the p35 encoding nucleic acid sequence comprises at least 47 contiguous nucleotides identical in sequence to at least 47 contiguous nucleotides of a nucleic acid sequence selected from the group consisting of SEQ ID NO:46 and SEQ ID NO:49.

24. (New) The nucleic acid molecule of Claim 22, wherein said nucleic acid molecule encodes a protein comprising an amino acid sequence 90% identical to an amino acid sequence selected from the group consisting of SEQ ID NO:47, SEQ ID NO:50, SEQ ID NO:53, SEQ ID NO:59, SEQ ID NO:62, and SEQ ID NO:67.

25. (New) The nucleic acid molecule of Claim ~~25~~ 24, wherein said nucleic acid molecule encodes a protein having a function selected from the group consisting of

- (a) eliciting an immune response against an IL-12 protein having an amino acid sequence selected from the group consisting of SEQ ID NO:62, and SEQ ID NO:67;

- (b) selectively binding to an antibody raised against an IL-12 protein having an amino acid sequence selected from the group consisting of SEQ ID NO:47, SEQ ID NO:50, SEQ ID NO:53, and SEQ ID NO:59, SEQ ID NO:62, and SEQ ID NO:67; and
- (c) exhibiting IL-12 activity.

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27' (New) The nucleic acid molecule of Claim 22, wherein said nucleic acid molecule is selected from the group consisting of:

(a) a nucleic acid molecule comprising a nucleic acid sequence that encodes a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:62, and SEQ ID NO:67; and

(b) a nucleic acid molecule comprising an allelic variant of a nucleic acid molecule encoding a protein having any of said amino acid sequences of (a).

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28' (New) The nucleic acid molecule of Claim 22, wherein said nucleic acid molecule is selected from the group consisting of:

(a) a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO:61, SEQ ID NO:63, SEQ ID NO:66, and SEQ ID NO:68; and

(b) a nucleic acid molecule comprising an allelic variant of a nucleic acid molecule comprising any of said nucleic acid sequences of (a).

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29' (New) The nucleic acid molecule of Claim 22, wherein said nucleic acid linker lies 3' of the p35 subunit encoding nucleic acid sequence and 5' of the p40 subunit encoding nucleic acid sequence.

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30' (New) The nucleic acid molecule of Claim 28 wherein said nucleic acid linker comprises SEQ ID NO:83.

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31' (New) The nucleic acid molecule of Claim 22, wherein said nucleic acid molecule comprises a nucleic acid sequence that encodes a canine IL-12 single chain protein.

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32. (New) The nucleic acid molecule of Claim 31³², wherein said single chain protein is selected from the group consisting of:

(a) single chain protein comprising a p40 subunit at the N-terminus and a p35 subunit at the C-terminus; and

(b) single chain protein comprising a 35 subunit at the N-terminus and a 40 subunit at the C-terminus

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33. (New) The nucleic acid molecule of Claim 22, wherein said nucleic acid molecule comprises a nucleic acid molecule selected from the group consisting of nCaIL-12₁₅₉₉ and nCaIL-12₁₅₃₃.

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34. (New) A recombinant molecule comprising a nucleic acid molecule as set forth in Claim 22.

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35. (New) A recombinant virus comprising a nucleic acid molecule as set forth in Claim 22.

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36. (New) A recombinant cell comprising a nucleic acid molecule as set forth in Claim 22.

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37. (New) A composition comprising an excipient and an isolated nucleic acid molecule of Claim 22.

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38. (New) A method to produce a canine IL-12 protein comprising:
(a) obtaining a cell comprising a nucleic acid molecule, wherein said nucleic acid molecule comprises:

(i) a nucleic acid sequence encoding a protein comprising an amino acid sequence at least 90% identical to an amino acid sequence selected from SEQ ID NO:53, and SEQ ID NO:59;

(ii) a nucleic acid linker of (XXX)_n wherein n=0 to 60; and

(iii) a nucleic acid sequence encoding a protein comprising an amino acid sequence at least 90% identical to an amino acid sequence selected from SEQ ID NO:47 and SEQ ID NO:50,

wherein said nucleic acid molecule encodes a single chain canine IL-12 protein; and

(b) culturing said cell under conditions suitable for expression of said protein from said nucleic acid molecule.

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39. (New) The nucleic acid molecule of Claim ³⁷~~38~~, wherein said nucleic acid molecule is selected from the group consisting of:

(a) a nucleic acid molecule comprising a nucleic acid sequence that encodes a protein comprising an amino acid sequence selected from the group consisting of SEQ ID NO:47, SEQ ID NO:50, SEQ ID NO:53 and SEQ ID NO:59; and

(b) a nucleic acid molecule comprising an allelic variant of a nucleic acid molecule encoding a protein having any of said amino acid sequences of (a).

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40. (New) The nucleic acid molecule of Claim ³⁸~~39~~, wherein said nucleic acid molecule is selected from the group consisting of:

(a) a nucleic acid molecule comprising a nucleic acid sequence that encodes a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:62, and SEQ ID NO:67; and

(b) a nucleic acid molecule comprising an allelic variant of a nucleic acid molecule encoding a protein having any of said amino acid sequences of (a).

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41. (New) The nucleic acid molecule of Claim ³⁷~~38~~, wherein said nucleic acid molecule is selected from the group consisting of:

(a) a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO:61, SEQ ID NO:63, SEQ ID NO:66, and SEQ ID NO:68; and

(b) a nucleic acid molecule comprising an allelic variant of a nucleic acid molecule comprising any of said nucleic acid sequences of (a).